

ATTACHMENT 19



EPA REGION VIII

999 18th St., Denver, CO 80202
Mr. Robert Brobst

PART 1 C BIOSOLIDS REGULATIONS

Federal regulations newly published in the *Federal Register* can be difficult to understand. Therefore, an "easy-to-read" summary of 40 CFR Part 503 has been developed by EPA and has been included in this handbook for your use (Section 1.1). See also *Part 503 Implementation Guidance* (EPA 833-R-95-001), 1995.

All of the information and requirements found in 40 CFR Part 503 are included in the provided summary. However, special attention should be paid to the Land Application and Surface Disposal sections and to the corresponding Pathogen and Vector Attraction Reduction requirements, since these practices are the most commonly used in EPA Region 8.

Section 1.2 is a paper that was presented at an international conference in 1994. It provides the recent history of biosolids management, improvements in biosolids quality, and improvements made in equipment, processes and management practices. With this background in place, the author discusses the implementation of the 503 regulations, the problems associated with the aging infrastructure in the U.S., and some predictions for future biosolids management trends.

Section	Topic	Page
1.1	Summary of 40 CFR Part 503 Standards for the Use or Disposal of Sewage Sludge	1.1-1
1.2	United States Regulations and Practical Experience on Biosolids Reuse and Disposal.....	1.2-1



Heat Dried Sewage Sludge Products

There are few aspects of the new rule that will cause changes to established heat dried sewage sludge D&M programs. The temperatures used in sewage sludge drying systems which aim at producing a marketable product are typically in excess of 50°C, and retention times in the dryer are 30 minutes or longer. Using the equations provided and a nominal processing temperature of 80°C (the PFRP definition for sewage sludge drying), the product residence time in the dryer required to meet the Class A pathogen reduction is in the order of magnitude of seven seconds, while the rule requires a minimum residence time in the dryer of 15 seconds. Vector attraction reduction will similarly be easily met by dryers that produce a product for marketing. The degree of dryness required is >75% solids if the product does not contain unstabilized primary sewage sludge, and >90% solids if the product does contain unstabilized primary sewage sludge. The marketplace is typically looking for products of >90% solids so that the sewage sludge product is compatible with other dry fertilizer products.

Alkaline Stabilized Sewage Sludge Products

Certain alkaline stabilization practices comply with the Class A pathogen reduction requirements, which include a combination of elevating pH to above 12 for 72 hours and temperature to above 52°C for 12 hours or longer during the period that pH is above 12, along with air drying to >50% solids. Other alkaline stabilization approaches may qualify the sewage sludge as Class A based on meeting the elevated time/temperature criteria alone or PFRP equivalency.

SURFACE DISPOSAL

Types of Disposal Operations

The Surface Disposal subpart of the regulation applies to sewage sludge and domestic septage disposal operations such as the following:

Monofills (sewage sludge-only landfills). This could be a trench system, area-fill system, or similar bulk disposal operation, usually involving a cover material over the deposited sewage sludge.

Dedicated disposal surface application sites. At some sites, sewage sludge pollutants are applied at higher than the Cumulative Pollutant Loading Rates (Table 2 values) for disposal purposes even though there also may be beneficial use aspects. Application of sewage sludge nitrogen at higher-than-acceptable agronomic rates may also be included as surface disposal sites. Potential pollutant leaching to groundwater or excessive plant uptake levels are controlled in a site-specific manner. Such sites are usually owned or leased by the wastewater authority and are highly controlled for access and operations.

Piles or mounds. At many treatment plants, sewage sludges have been placed in piles or otherwise mounded on a portion of the property as final disposal.

Impoundments or lagoons. At many treatment plants sewage sludge or domestic septage has been discharged to lagoons or impoundments as final disposal, with the excess liquid evaporated or recycled for treatment.

This subpart deals with surface disposal sites and sewage sludge placed on such sites for final disposal. Surface Disposal does not include sewage sludge placement for storage or treatment purposes.

EPA does not intend to regulate under Part 503 wastewater treatment lagoons in which sewage sludge is generated during treatment or lagoons in which sewage sludge is being treated. However, when such sewage sludges are removed from wastewater treatment lagoons or sewage sludge treatment lagoons, their use or disposal will be regulated under Part 503, if applicable.

There are many sewage sludge lagoons or places where sewage sludges have been piled that no longer are receiving sewage sludge (*i.e.*, they are no longer "active" units). These would probably not be regulated under Part 503, especially if they have been "closed" in a proper manner. However, if these sites or operations are still active in 1993, the date they become inactive could be critical in determining whether they are regulated under Part 503. If sites that were inactive have the old sewage sludge removed from them in the future, the use or disposal of the sewage sludge at that time would likely fall within the



jurisdiction of Part 503 if the material is used or disposed of through a practice covered by Part 503. Of course if previously closed sites become active again and receive sewage sludge after the Part 503 requirements became effective, such facilities would be subject to Part 503.

Storage vs. Disposal

The Part 503 regulation allows sewage sludge to be stored for up to two years without any restrictions or control. However, if sewage sludges remain on the land beyond 2 years, EPA may consider this "disposal" and regulate it as a surface disposal site.

If the wastewater authority can provide an adequate explanation concerning why the material has to remain on the land for longer than 2 years, EPA will not regulate these operations as surface disposal sites. A common example would be a sewage sludge lagoon that has a 4 or 5 year cycle time between sludge cleanout operations. In this example, the lagoon may be considered "treatment" or "storage," and not "disposal."

General Requirements

There are a few general requirements that apply to surface disposal of sewage sludge on active sewage sludge units. These include compliance with all applicable Part 503 requirements; closure by [one year after the effective date of the rule] of active sewage sludge units located within 60 meters of a fault with displacement in Holocene time, in an unstable area, or in a wetland, unless authorized by the permitting authority; and the need for closure and post-closure plans at least 180 days prior to closing any active sewage sludge unit. Also, site owners are required to provide written notification to the subsequent owner that sewage sludge was placed on the land.

Pollutant Limits

Where surface disposal sites use liners and leachate collection systems, there are no pollutant concentration limits because pollutants leaching from the solids mass will be collected in the leachate and treated as necessary to avoid a pollution problem. For the site liner to qualify, it must have a hydraulic conductivity of $\#1 \times 10^{-7}$ centimeters per second.

For surface disposal sites with no liner and leachate collection system, limits on 3 pollutants are established in the rule. While these vary based on the distance of the active sewage sludge unit boundary from the site property line, the most extreme values allowed are listed in the following table.

**Maximum Allowable Pollutant Concentrations in Sewage Sludge
for Disposal in Active Sewage Sludge Units without a Liner
and Leachate Collection System**

Unit Boundary to Property Line	Pollutant Concentrations ¹		
Distance (meters)	Arsenic (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)
0 to # 25	30	200	210
25 to # 50	34	220	240
50 to # 75	39	260	270
75 to # 100	46	300	320
100 to # 125	53	360	390
125 to # 150	62	450	420



Unit Boundary to Property Line	Pollutant Concentrations*		
Distance (meters)	Arsenic (mg/kg)	Chromium (mg/kg)	Nickel (mg/kg)
≤ 150	73	600	420

* Dry weight basis

The three pollutants listed present the greatest threat of leaching to groundwater and causing exceedances of the Maximum Contaminant Level (MCL) for that pollutant. The allowable concentrations of the 3 pollutants are reduced if the active sewage sludge unit boundary is less than 150m from the site property line. The table shows the worst case limits if the site boundary is located from 0 to <25m from the disposal site property line. Different limits for these 3 pollutants can be developed through a site-specific assessment, as specified by the permitting authority, that shows the site has different parameters than the ones EPA used in establishing the maximum allowable concentration limits.